

output, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Applicants respectfully assert that the Examiner is in error. The combination of Dahm and Delfyett would not lead one of ordinary skill in the art to adjust the parameters of the laser system, as claimed.

Specifically, the gain medium of Dahm is comparatively long and the spot size is small which would lead to high non-linear effects (col. 5, lines 45-49). Thus, increasing the spot size of Dahm would have negative effects on mode locking. The result of the claimed combination of features is a high gain and a small spot size and thus, a long gain medium is not possible. While a small spot size also supports mode-locking, Dahm uses long pulses that do not need any mode-locking for the purpose of silicon wafer dicing (col. 3, lines 4-7). Thus, one of ordinary skill in the art would not start with Dahm to render obvious the claims of the current application.

Additionally, Applicants assert that the added features of peak pulse power greater than 100kw and pulse energies above 100nJ as well as the repetition rate (as recited in claims 1 and 21) are features that cannot be simply adjusted, as asserted by the Examiner. These features are closely linked to the design of the cavity and the used materials (as discussed on pages 5-9 of the specification). The claimed invention solves problems presented by pulse energies and pulse peak powers by replacement of the acousto-optical modulator by the electro-optical modulator. To use the recited features with an acousto-optical modulator would cause the intensities in the spot to become too high (as discussed in the specification at page 4, lines 8-24).

Thus, the relevant problem that triggers the laser system of the current application is only present for the claimed energy and power regime and for high repetition ultra-short pulse lasers. For lower rates, such as those disclosed in Dahm and Delfyett, the energy power or

pulse widths create the problem and therefore, the motivation to combine Dahm and Delfyett is lacking.

Dahm not only does not give any motivation for a development that would include the teaching of Delfyett but shows features that have to be considered as problematic when combined with the setup of Delfyett. In a previous Office Action, the Examiner asserted that Delfyett teaches that the saturable absorber of Delfyett may generate pulses at least down to 10ps (col. 4, lines 10-24). Additionally, the Examiner asserted that provided that such a pulse width is less than that achievable by Dahm, the saturable absorber of Delfyett would enhance the teachings of Dahm by allowing shorter pulses. As such, the Examiner asserted that a desirable result of Dahm teaches that reduced pulse time adventurously reduces the heating of the area around the target to which the laser is directed (col. 2, lines 19-22).

However, Dahm does not provide a motivation to reduce the pulse width. Dahm merely discloses a problem that can be solved with other approaches, e.g. cooling with material or by moving the material or the spot in order to reduce the interaction for a particular zone of the material or increasing the spot size which would lead to a lower intensity and therefore to a reduction of heating. In other words, Dahm fails to disclose that the reduction in pulse width would result in a reduction in heating. Thus, one of ordinary skill in the art at the time of the invention would not have been motivated to reduce pulse width in view of the many other alternatives available to achieve the desired result.

Even if it is assumed that Dahm discloses shortening of pulses, Dahm does not disclose a means of accomplishing this task. As discussed above, Dahm discloses characteristics that are problematic with respect to a reduction of pulse width. These characteristics, thus, prevent a skilled person from reducing pulse widths significantly below the 1.5 ns disclosed in Dahm. On the other hand, Delfyett discloses saturable absorbers without any motivation to incorporate those components into the claimed laser system with its

specific functionality. Specifically, laser setups are very sensitive to any change of design and operation parameters. It is not possible to arbitrarily mix several components for lasers that are disclosed in different publications if they do not exactly meet the same type of laser and operational regime. Thus, incorporating the saturable absorbers of Delfyett into the system of Dahm is inadmissible hindsight.

The Examiner asserts that the introduction of a saturable absorber mirror as taught by Delfyett would enhance the teachings of Dahm by facilitation of mode locking conditions at a short pulse rate (col. 4, lines 22-25). However, Dahm fails to disclose a need for any mode-locking. Additionally, none of the applied references disclose any motivation or achievable benefit of such incorporation. Finally, the system of Dahm is not suitable for achieving the desired results and would have to be modified in several ways. These modifications are not obvious and are not disclosed in Delfyett.

Claims 2, 7, 8, 10, 12, 17, 18 and 20-23 are also allowable over Dahm in view of Delfyett for at least the same reasons as claim 1, as well as for the additional features the claims recite.

According, Applicants respectfully request withdrawal of the rejection.

The Office Action rejects claims 3 and 13 under 35 U.S.C. §103(a) as being obvious over Dahm in view of Delfyett and further in view of U.S. Patent Application Publication No. 2005/0152426 to Dell'Acqua et al. (hereinafter "Dell'Acqua"). The rejection is respectfully traversed.

The rejection is based on the allegation that Dahm in view of Delfyett disclose or would have rendered obvious all of the features of claim 1. As discussed above, Dahm in view of Delfyett does not disclose and would not have rendered obvious all of the features of claim 1. Because Dell'Acqua fails to cure the deficiencies of Dahm and Delfyett, the rejection is improper. Applicants respectfully request withdrawal of the rejection.

The Office Action rejects claims 4 and 14 under 35 U.S.C. §103(a) as being obvious over Dahm in view of Delfyett and further in view of U.S. Patent No. 3,675,154 to Duguay et al. (hereinafter "Duguay"). The rejection is respectfully traversed.

The rejection is based on the allegation that Dahm in view of Delfyett disclose or would have rendered obvious all of the features of claim 1. As discussed above, Dahm in view of Delfyett does not disclose and would not have rendered obvious all of the features of claim 1. Because Duguay fails to cure the deficiencies of Dahm and Delfyett, the rejection is improper. Applicants respectfully request withdrawal of the rejection.

The Office Action rejects claims 5 and 15 under 35 U.S.C. §103(a) as being obvious over Dahm in view of Delfyett in view of Duguay and further in view of Applicant's Admitted Prior Art (hereinafter "AAPA"). The rejection is respectfully traversed.

The rejection is based on the allegation that Dahm in view of Delfyett disclose or would have rendered obvious all of the features of claim 1. As discussed above, Dahm in view of Delfyett does not disclose and would not have rendered obvious all of the features of claim 1. Because Duguay and AAPA fail to cure the deficiencies of Dahm and Delfyett, the rejection is improper. Applicants respectfully request withdrawal of the rejection.

The Office Action rejects claims 6, 16 and 19 under 35 U.S.C. §103(a) as being obvious over Dahm in view of Delfyett and further in view of AAPA. The rejection is respectfully traversed.

The rejection is based on the allegation that Dahm in view of Delfyett disclose or would have rendered obvious all of the features of claim 1. As discussed above, Dahm in view of Delfyett does not disclose and would not have rendered obvious all of the features of claim 1. Because AAPA fails to cure the deficiencies of Dahm and Delfyett, the rejection is improper. Applicants respectfully request withdrawal of the rejection.

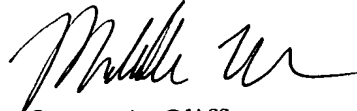
The Office Action rejects claim 9 under 35 U.S.C. §103(a) as being obvious over Dahm in view of Delfyett and further in view of U.S. Patent 4,849,036 to Powell et al. (hereinafter "Powell"). The rejection is respectfully traversed.

The rejection is based on the allegation that Dahm in view of Delfyett disclose or would have rendered obvious all of the features of claim 1. As discussed above, Dahm in view of Delfyett does not disclose and would not have rendered obvious all of the features of claim 1. Because Powell fails to cure the deficiencies of Dahm and Delfyett, the rejection is improper. Applicants respectfully request withdrawal of the rejection.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Michelle K. Windom
Registration No. 65,466

JAO:MQW/tbm

Date: December 22, 2009

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry of this filing; Charge any fee due to our Deposit Account No. 15-0461</p>
--